Anæsthesia of the Trunk in Locomotor Ataxia.

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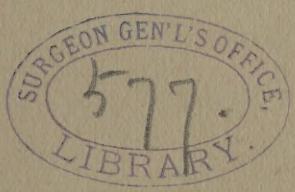

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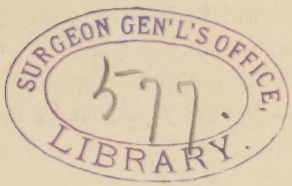

ANÆSTHESIA OF THE TRUNK IN LOCOMOTOR ATAXIA.

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Since the time of Romberg and Duchenne the sensory disturbances of tabes dorsalis have been subjected to careful study by many good observers. Considering this fact, it seems remarkable that the anæsthesia of the trunk, to which I wish to call attention, should, for so long a time, have escaped detection. It is striking in location, limitation, and extreme frequency. Hitzig * has the credit of having first called attention to its occurrence and principal characteristics, but Laehr † has made by far the most extensive study of the symptom. His material embraced sixty cases of locomotor ataxia, many of them having been examined repeatedly.

This trunk anæsthesia is found in the form of a band about the body, generally in the region of the

* *Ueber traumatische Tabes und die Pathogenese der Tabes im Allgemein.* Berlin, 1894.

† *Archiv für Psych. und Nerv.*, 1895, Bd. xxvii, Heft 3.

nipple, and presents a number of interesting peculiarities, many of which, for the present, must be considered as unique and unexplained. Qualitatively it is quite distinct from the sensory blunting on the lower extremities so generally present in tabes. The latter is

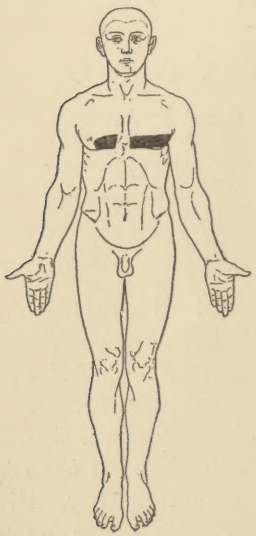

FIG. 1 *a*.

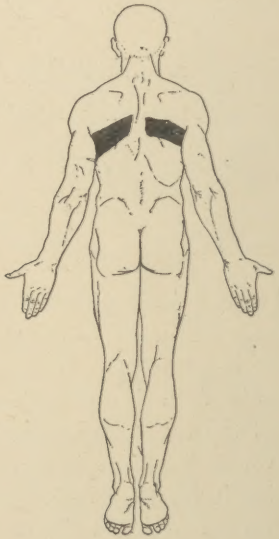

FIG. 1 *b*.

substantially an analgesia (diminution or loss of the pain sense), while the trunk anæsthesia is essentially tactile. When very slight, it is discoverable only to lightest touches, and sensation to pain is quite normal; when more marked, there is also some degree of analgesia, but the band so affected is narrower than that of tactile anæsthesia. The area begins to develop as a narrow zone—or rather two half zones, one about either

half of the body—and gradually broadens as the pathological basis progresses. In a very early stage the zones may be incomplete, not reaching to the middle line, or restricted to the front or back alone. The cases from which Figs. 1, 2, and 3 are taken are illustrative.

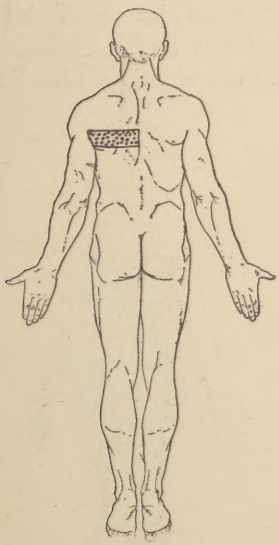

FIG. 2.

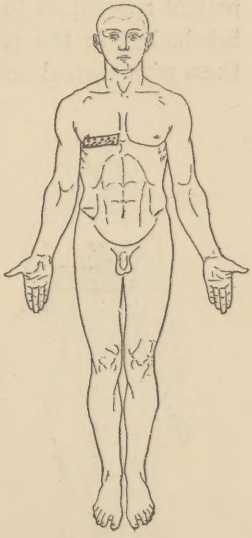

FIG. 3.

Fig. 1, which is from a case that is probably incipient tabes, shows the band of anæsthesia broken up into four plaques by interruptions in front, behind, and in the axillary line. It should be noted that although this case is considered to be one of incipient tabes, the symptoms are too incomplete to make a positive diagnosis possible. Fig. 2 is from a well-developed case, in which the only anæsthesia on the trunk was the ill-defined

area depicted. Fig. 3 represents the anæsthetic trunk area in a beginning but undoubted case of tabes. It is limited to the front of one side and is very narrow. In other cases there may be no real anæsthesia, but simply a diminished accuracy in locating tactile impressions. Such a case is illustrated by Fig. 4. This patient recognized the lightest touches of a camel's-hair brush, but in the area indicated was unable to locate them with normal certainty. The examination of localiz-

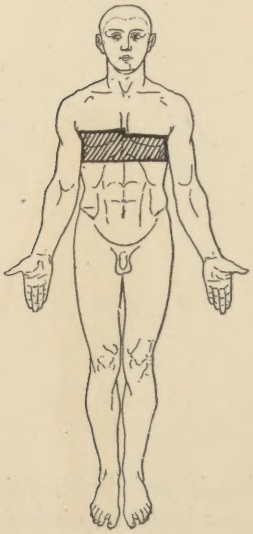

FIG. 4.

FIG. 5.

ing power is, of course, made difficult if there be ataxia of the arms. The result, in any event, is to be accepted with some reserve, as examination of a number of healthy individuals has taught me that accuracy in localiz-

ing touch varies greatly. Furthermore, the part of the body under consideration is normally not very sensitive and localization not very exact.

Laehr says that although the anæsthesia may be broader on one side of the body than the other, it is so by virtue of extension downward, the upper borders remaining nearly always on a level. To this I have found numerous exceptions. See Figs. 7, 10, 12, and 13. He says, too, that the upper border is always more

FIG. 6 *a*.

FIG. 6 *b*.

distinctly defined than the lower. This difference has not seemed to me to be at all striking, but I have found that either border recedes very considerably when located by approaching the anæsthetic zone as compared

to its location defined by approaching the normal surface. That is, if the examiner start in the anæsthetic area and gradually pass up or down with successive touches until one is perceived by the patient, a broader zone is outlined than if he start where sensation is nor-

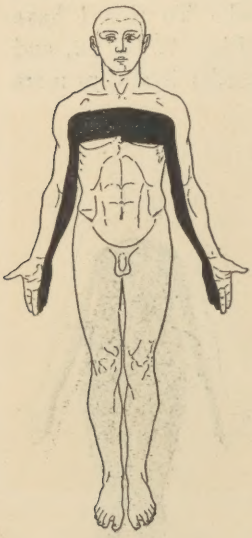

FIG. 7 *a*.

FIG. 7 *b*.

mal and pass into the anæsthetic area where a touch is unperceived.

Perhaps the most interesting peculiarity is that the area of anæsthesia does not correspond to the cutaneous distribution of the intercostal nerves, but represents the innervation from spinal-cord segments. It will be seen at once from the figures that it is more horizontal than the course of the spinal nerves. For instance, Figs. 14,

15, and 16 represent the anæsthetic area in a case of tabes as outlined and stained with tincture of iodine. Figs. 17 and 18 show the direction of the intercostal spaces in the same patient. As the anæsthesia extends upward on the trunk it gradually invades the upper extremities exactly as it does in lesions of the spinal cord or of the posterior nerve roots. Experiments on monkeys and clinical experience in injuries and other definitely

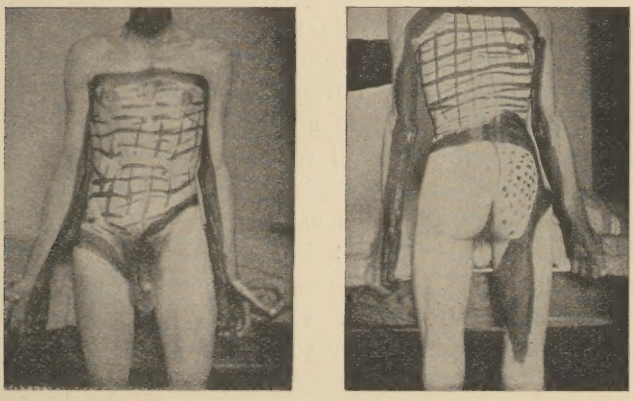

FIG. 8.—The anæsthetic area was stained with tincture of iodine and the patient photographed. The stripes indicate complete anæsthesia the same as solid stain. They were chosen simply to save time. The dots indicate an area of doubtful anæsthesia.

localized affections of the cord in man have shown that as such lesions are located progressively higher or pass upward the anæsthesia invades the arm in a regular way. It first affects the inner surface of the upper arm, then the entire ulnar border, and gradually passes outward until the whole arm is involved. We note exactly the same thing in the extension of trunk

anæsthesia in locomotor ataxia. When it has advanced to the third rib, at least (Lachr), it first appears on the arm as a tongue extending down from the axilla. Further advance is down the ulnar surface and then outward. This correspondence is strikingly shown in Figs. 5, 6, 7, 8, 9, and 10. Fig. 5 is a combination of two figures from Thorburn.*

The outline on the right side of the figure (supposing it to be a person facing the reader) depicts the anæsthesia in a case of transverse lesion of the cord between the seventh and eighth cervical segments; that on the left side, in a lesion between the fifth and sixth segments. Fig. 6, taken from Bruns,† shows the distribution of anæsthesia in a cord lesion between the sixth and seventh cervical segments. If, now, these figures are compared with Figs. 7 and 8 from cases of locomotor ataxia, no comment is necessary to emphasize the similarity. Fig. 9 is from the patient represented in Fig. 7, but the examination was made after two months of treatment. Fig. 10 is from a case of well-developed tabes. The tongue of anæsthesia that extends on to the upper arm in these cases corresponds almost exactly to the area that Head ‡ assigns to the second dorsal root. The patient (tabes) from whom Fig. 11 was taken had a like extension on to the arm, but, as it was limited to the inner surface, it could not be made visible in the figure.

Another characteristic is, that when the anæsthesia is slight it may almost or quite disappear if tested for a few minutes. Figs. 2 and 3 are from such cases. In

* *Brain*, 1893, p. 355.

† *Deutsche medicinische Wochenschrift*, 1889, p. 984.

‡ *Brain*, 1893, pp. 1 to 133. Plate.

either case, although at first a distinct anæsthetic plaque could be made out, a continuation of the examination in an attempt to accurately define it resulted in its entire disappearance, so that the slightest touch could be felt. In the case furnishing Fig. 3, after the anæsthesia had thus disappeared it was easy to demonstrate a diminution of localizing power in the previously anæs-

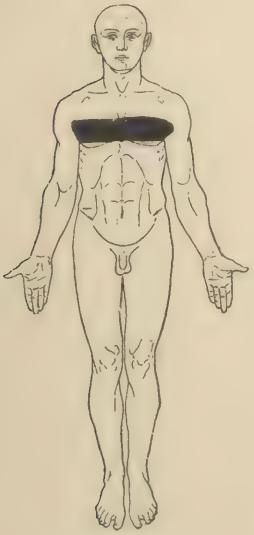

FIG. 9 *a*.

FIG. 9 *b*.

thetic region. Similar to this disappearance of the anæsthesia is the fact that the boundaries, which are never sharply defined, frequently recede as the examination progresses.

In traumatism of the spinal cord, myelitis, etc.,

there is frequently a narrow band of hyperæsthesia * adjoining the anæsthesia, and a similar condition may often be found near the anæsthetic area of tabes. In a few of my cases it was very striking. Hitzig says that this hyperæsthetic zone is particularly sensitive to cold. Within the limits of the hyperæsthesia the superficial reflexes are exaggerated; for instance, in the case illus-

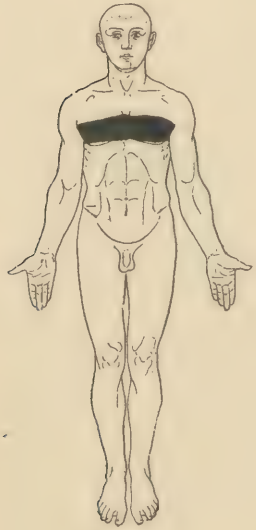

Fig. 10 *a*.

Fig. 10 *b*.

trated by Fig. 11, the liveliest reflexes were excited by light stroking with a camel's-hair brush anywhere

* This is really a zone of hyperalgesia. I think Leyden was the first to point out that true hyperæsthesia seldom if ever exists as a symptom of organic nervous disease—that is, a hypersensitiveness that renders perceptible a stimulus that could not be perceived by the patient in a normal condition.

within two or three inches of the anæsthetic region. Laehr attempts to explain the rather conflicting statements regarding the condition of the superficial reflexes in tabes by the varying location of the tactile anæsthesia. Should the place on the skin stimulated to

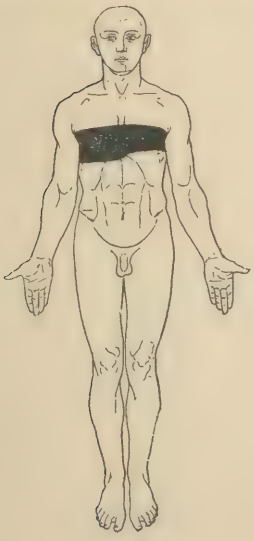

Fig. 11 *a*.

Fig. 11 *b*.

elicit a superficial reflex be anæsthetic, no reflex will be produced; should such place fall within a hyperæsthetic area, the reflex will be exaggerated. This explanation seems to me to be reasonable, and is sustained by my experience, so far as it goes.

Another interesting fact regarding trunk anæsthesia in tabes, and one that may possibly throw some light on the pathology of the disease, is that the zones may be double; which would indicate the simultaneous

invasion of different levels of the cord. This is plentifully illustrated by the cases of Lachr, and I had observed it some time before the appearance of his paper. In one case I outlined an area in the usual location and another about the lower abdomen. Fig. 12,* I think,

Fig. 12 *a*.

Fig. 12 *b*.

illustrates a similar instance, although on one side the abdominal zone has extended on to the lower extremity. The dotted shading indicates areas where anæsthesia was absent or doubtful. These areas, by the way, correspond to those pointed out by Oulmont † a number

* This case was examined in March or April, 1894, in the service of Professor Gowers, at the Queen's Square Hospital, and I am indebted to him for the privilege of publishing it.

† *Gaz. méd.*, 1877, No. 19.

of years ago. I may add that the distribution of analgesia in this case was entirely different from that of the tactile anæsthesia. There was simply general analgesia, excepting on the head, neck, and hands, where it was doubtful or absent.

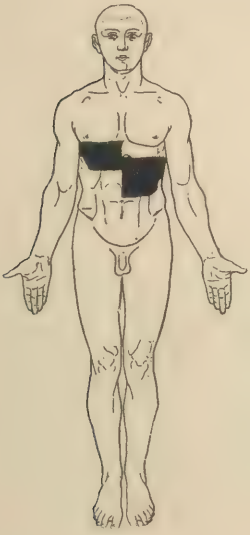

FIG. 13 *a*.

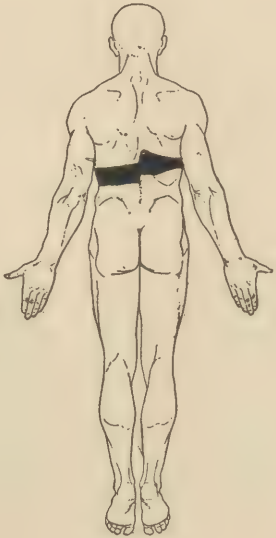

FIG. 13 *b*.

That this peculiar trunk anæsthesia is of great frequency in tabes can not be doubted. Hitzig believes it to be practically always present. Of the sixty cases examined by Laehr it was absent in only five, and these were complicated by paretic dementia—that is, they were cases in which the cerebral symptoms predominated and largely overshadowed the spinal symptoms. In two additional cases the symptom was at first absent,

but developed under observation. They were cases in which optic atrophy was a prominent symptom and may therefore be said to have been of the cerebral type. My own statistics are not nearly so large. Of twenty cases of locomotor ataxia, including one doubtful case in which trunk anæsthesia was absent, seventeen showed the symptom to a greater or less degree. I should consider eighty-five per cent. a conservative estimate of its incidence, although in incipient cases and in those complicating paretic dementia the frequency is, in all probability, considerably less.

The relation of trunk anæsthesia to the other symptoms of tabes and the general progress of the disease is not yet determined and will require for its definition a

FIG. 14.

FIG. 15.

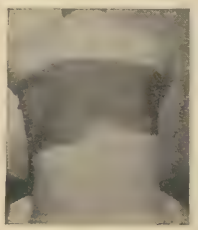

FIG. 16.

much wider experience. In a general way, the more advanced the case, the more pronounced is the anæsthesia and the greater its superficial extent. Figs. 8, 11, and 12, for instance, showing extensive anæsthesia, are from advanced cases, and Figs. 1 and 3 from patients in the first stage. The patient represented by Fig. 8 could walk only a few steps alone when first seen, but improved somewhat under treatment by gymnastics. Fig. 11 is taken from a man of fifty-eight years, who

walks with difficulty, was for a time entirely incapacitated for pursuing his occupation (bookbinder), and has all the principal symptoms of tabes to a marked degree. The patient who supplied Fig. 12 was bed-fast. Paralysis of one abducens and lancinating pains were almost the only complaints respectively of the patients furnishing Figs. 1 and 3. Locomotion in either case was practically normal. But exceptions to this correspondence between the severity of the disease and the extent of the symptom under consideration are numerous. Fig. 7 is taken from a patient who complains of little but sexual impotence, while Fig. 2 shows the trunk anæsthesia in a patient who can not go about without an assistant and who has almost completely lost the sense of pain in the lower extremities. I may also mention in this connection the case of a gentleman with typical locomotor ataxia who has considerable difficulty in walking, marked analgesia of the lower extremities, very distressing pains and paræsthesiæ, loss of sexual power, and considerable bladder disturbance, and yet has absolutely no anæsthesia of the trunk.

The experience of Laehr that the body anæsthesia is apt to be slight or wanting in cases with optic atrophy is illustrated by Fig. 4. This patient has double optic atrophy, producing on the right side complete amaurosis; he has the classical symptoms of tabes, but has, as before noted, no real anæsthesia on the trunk. A striking exception, if, indeed, there be a rule, is shown by Fig. 13. The patient is absolutely blind from optic atrophy, but has extensive and pronounced trunk anæsthesia. It should be remarked, however, that other spinal symptoms are prominent, and that the case has been rather unusual in the rapidity of its progress. It

is well known that the cases in which optic atrophy occurs ordinarily progress so slowly, in other respects, as to remain almost at a standstill.

As before stated, the five cases in which Laehr found no anæsthesia were paretic dements. In five additional cases of dementia paralytica with tabes, trunk anæsthesia was found, but it was not marked, and was very

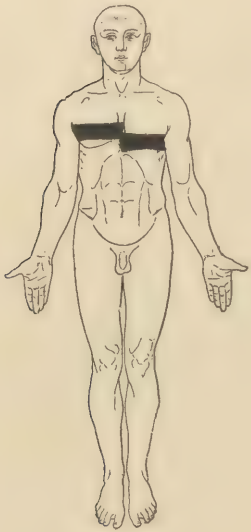

FIG. 17 *a*.

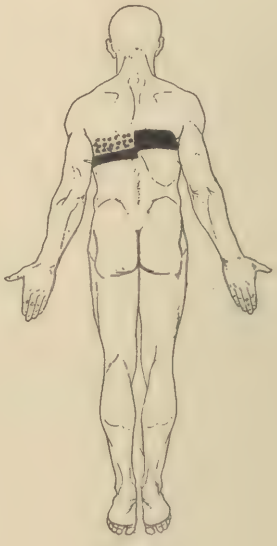

FIG. 17 *b*.

changeable. But to this rule there must also be striking exceptions. I have examined for the symptom in only three cases, in which both diseases were undoubtedly present. One of them had no anæsthesia of the trunk; the other two had it to a marked degree. Figs. 14, 15, and 16 are made from photographs of one of

these patients after the anæsthetic zone had been painted with tincture of iodine.*

The diagnostic value of the symptom has yet to be determined, but it probably is not very great. Laehr found it early, but, except in one case, not so early as analgesia of the legs. It can be said to have been a diagnostic aid in only one of my cases (Fig. 1) and it is not absolutely certain that the case is one of tabes, though I believe that it is.

The question at once arises, May this band of anæsthesia be found in other diseases, especially in those liable to be mistaken for locomotor ataxia? Here, again,

FIG. 18.

FIG. 19.

we must await the verdict of further experience, but even now a provisional answer in the affirmative may be given. Any process involving the posterior nerve roots in the dorsal region might cause such an anæsthetic band. Localized meningitis, tumor, or caries of

* For the photographs and those from which Fig. 8 is made I am indebted to Dr. McCorm, late of the Illinois Eastern Hospital for the Insane, who kindly prepared them for me.

the spine may be mentioned as such causative lesions. In hysteria plaques may be present similar to the incomplete zones already spoken of (Figs. 1, 2, and 3). Indeed, I have now under my care a man with hysteria who presented such a plaque on the right side. Similar plaques and irregular areas are frequently found in syringomyelia, and a case may easily be imagined in which the anæsthetic area would take the form found in tabes. But none of the diseases just named would likely be mistaken for locomotor ataxia, and I know of no case very similar to this disease, or one that could be called pseudo-tabes, in which a band of trunk anæsthesia was found, except the following:

The patient was a man of forty-seven years, whom I was asked to see about a year ago. The previous history was negative, except that about a year before he had suffered considerably from some stomach trouble for which he went to Hot Springs, Dakota. By the spring of 1895, after several months of treatment, he had apparently quite regained his health, but about a month later began to notice some uncertainty and a feeling of weakness in the legs. These symptoms increased rather rapidly, and when I saw him, six months after the beginning of the affection, he was barely able to walk a few steps with the assistance of two canes. Inco-ordination was marked, and there was considerable weakness; the knee-jerks were absent; there was analgesia and some anæsthesia of the lower extremities, analgesia of the ulnar trunk, complete loss of sexual power, and considerable bladder disturbance. One pupil only could be examined, but that responded to light. One of the best neurologists in the West had made a diagnosis of locomotor ataxia. Although specific infection

was strenuously, and I think honestly, denied, and no evidence of it could be found on examination, I made a diagnosis of syphilitic pseudo-tabes and the patient was put on active antisyphilitic treatment. He rapidly improved. At the end of five months he could walk with ease and certainty, had regained sexual and vesical power, and (subjectively) normal sensation in the legs. He has remained active and well to the present time. At my first examination I discovered a broad band of trunk anæsthesia. Unfortunately, the notes taken at the time have been lost, but Dr. Bennett, with whom I saw the case, agrees with me that it was very broad, almost horizontal, and extended from about the level of the nipples downward, we think, almost to the umbilicus. On examination a few weeks ago, I found a band of anæsthesia still persisting about the trunk, but much narrower than before. Fig. 19 illustrates the present condition. The dots indicate a region where the anæsthesia was doubtful and could not be outlined. This anæsthetic zone corresponds in every respect to that found in tabes, although the case undoubtedly was one of syphilis of the cord and not locomotor ataxia. The patient still has no knee-jerks, and the question arises whether he may not now have incipient tabes succeeding the outspoken syphilis. It would be practically impossible to disprove an assertion to that effect, but I think it much more reasonable to suppose that the anæsthetic band and the loss of knee-jerk are due to irreparable injury inflicted by the syphilitic lesion, or to some part of that lesion rendered stationary, but not removed by the treatment. The case, in any event, is to be regarded as unique in the literature of trunk anæsthesia.

The anatomical basis and the exact location of the lesion upon which the trunk anæsthesia of tabes depends must, in the absence of careful microscopic examinations, remain largely a matter of surmise. I am inclined to regard the lesion as intramedullary and affecting principally the long fibres that pass directly upward in the posterior columns, leaving uninjured those that pass by various ways into the posterior gray horns and columns of Clarke.

VENETIAN BUILDING.